

Notice of Allowability

Application No.

09/674,041

Examiner

David A Reifsnyder

Applicant(s)

MARLOWE, JOHN

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to communication filed 8 October 2003 and Examiner-Initiated Interview 4 November 2003.
2. ☒ The allowed claim(s) is/are 1-36.
3. ☒ The drawings filed on 24 October 2000 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No. _____.
 - (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.
 - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1 <input type="checkbox"/> Notice of References Cited (PTO-892) | 2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 4 <input checked="" type="checkbox"/> Interview Summary (PTO-413), Paper No. <u>same</u> . |
| 5 <input type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. _____. | 6 <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8 <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9 <input type="checkbox"/> Other |

INTERVIEW SUMMARY AND EXAMINER'S AMENDMENT

ADDITIONAL CLAIMS FEE

The applicant's attorney Dennis C. Rodgers has requested that the appropriate fee for four additional dependent claims under 37 C.F.R. § 1.16 (c) of \$36 be charged to **Deposit Account No. 02-4300**.

INTERVIEW SUMMARY

Had an Examiner-Initiated telephone Interview with Dennis C. Rodgers on November 4, 2003 which resulted in a resolution of all the 35 USC § 112 2nd paragraph issues of claims 1, 3, 8, 10, 12-17, 20, 22, 24, 27, 29 and 30 of the present application. Discussed 35 USC § 112 2nd paragraph issues with three proposed dependent claims 33-35, and decided that they should be written as four dependent claims 33-36 with additional fees as shown above. The required amendments to the claims and the four dependent claims are done in the attached Examiner's Amendment.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Dennis C Rodgers on November 5, 2003.

The claims in the application have been amended and added as follows:

Claim 1 (currently amended): A magnetic filtration system for filtering magnetisable material from a fluid in which said magnetisable material is in suspension comprising:

inlet means;

outlet means,

a plurality of collection units disposed between the inlet means and the outlet means;

each collection unit comprising a magnet and at least two plates or plate arrays disposed on either side of the magnet so that the plates or plate arrays have opposing polarities,

wherein portions of the plates or plate arrays extend beyond part or all of an edge or edges of said magnet, facing plates of each of said collection units have one or a plurality of apertures and facing ~~plate portions~~ pole pieces between said apertures create magnetic flux fields which define one or more collection regions of magnetic attraction and magnetisable material collection, to facilitate collection of said magnetisable material in the collection regions between exposed facing plate portions,

wherein facing collection regions in each said collection unit are disposed between facing apertures such that said magnetic flux fields generated in the collection regions facilitate collection of said magnetisable material in a volume sandwiched between exposed facing plate portions,

and wherein the respective plates of adjacent collection units having like polarity are disposed adjacent to one another so as to substantially restrict the collection of said magnetisable ~~particles~~ material to the collection regions.

Claim 2 (previously amended): A magnetic filtration system as in claim 1 further comprising a housing made of a non-magnetisable material.

Claim 3 (currently amended): A magnetic filtration system as claimed in claim 1, further comprising a housing having means for connection to a flow system, ~~the or each said~~ collection units being located in the housing.

Claim 4 (previously amended): A magnetic filtration system as claimed in ~~claims~~ claim 1, wherein each collection unit is further separated from an adjacent collection unit by a spacing member.

Claim 5 (previously amended): A magnetic filtration system as claimed in claim 4, wherein said spacing member is non-magnetic.

Claim 6 (previously amended): A magnetic filtration system as claimed in claim 4, wherein said spacing member is magnetic.

Claim 7 (previously amended): A magnetic filtration system as claimed in claim 1, wherein the apertures in respective collection units, which are in closer proximity to the inlet means, are larger than those of units disposed nearer the outlet means.

Claim 8 (currently amended): A magnetic filtration system as claimed in claim 1, further comprising alignment means for disposing the apertures and ~~plate portions~~ pole pieces, in the facing plates of a collection unit, in substantial axial alignment.

Claim 9 (previously amended): A magnetic filtration system as claimed in claim 8, further comprising further alignment means for disposing the apertures of respective collection units in substantial axial alignment.

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Claim 10 (currently amended): A magnetic filtration system as claimed in claim 9, wherein said alignment means and further alignment means comprise a tab of given dimension on an internal edge of the plate and an axial unit having a groove of corresponding dimension to that of the tab, into which groove said tab can locate to provide a chosen axial and radial alignment of the facing plate portions and apertures of one or more of said a collection unit and/or those of an assembly of collection units.

Claim 11 (previously amended): A magnetic filtration system as claimed in claim 1, further comprising flow directing means for directing fluid flow from the inlet means towards the apertures in said plates.

Claim 12 (currently amended): A magnetic filtration system claimed in claim 1, further comprising slot-like apertures in said apertures and facing plate portions to further enhance the magnetic flux density between the facing plates of the ~~ex-each~~ collection units.

Claim 13 (currently amended): A magnetic filtration system as claimed in claim 1, wherein the facing pole pieces ~~pairs~~ are curved towards one another to further enhance the magnetic flux fields therebetween.

Claim 14 (currently amended): A magnetic filtration system as claimed in claim 1, wherein the facing plates ~~[[/]] or plate arrays~~ ~~pairs~~ are separated by a distance which best utilises the magnetic flux emergent from ~~the edges of said facing plates~~ ~~[[/]] or plate arrays~~ to attract and retain said magnetisable material in the fluid and which also facilitates a required collection capacity.

Claim 15 (currently amended): A magnetic filtration system as claimed in claim 1, wherein the attractive flux lines between facing ~~plate portions~~ pole pieces are substantially orthogonal to

repulsive flux lines in the apertures, such that the magnetisable material entering the apertures, is subject to the influence of both attractive and repulsive flux fields.

Claim 16 (currently amended): A magnetic filtration system as claimed in claim 1, further comprising a housing and wherein internal surfaces of the housing are disposed in close proximity to the outer portions of the said facing plates ~~[[/]]~~ or plate arrays pairs in order to substantially constrain fluid flow in the filtration system to regions in which magnetic flux fields generated by said facing plates ~~[[/]]~~ or plate arrays pairs facilitate the attraction and retention of the size range and type or types of ~~[[non-]]~~ the magnetisable particle material input to the filtration system.

Claim 17 (currently amended): A magnetic filtration system as claimed in claim 1, further comprising one or a plurality of distribution plates having further apertures in substantial axial alignment with said plate apertures, with each of the one or plurality of ~~the or each~~ distribution plates being disposed on either side of one or more of the collection units to ensure that all fluid is exposed to regions having magnetic flux density similar to, or greater than, a threshold required for particle attraction.

Claim 18 (previously amended): A magnetic filtration system as claimed in claim 2, wherein the housing comprises one or a plurality of sealable sections with interlockable threaded portions that enable said sections to be readily assembled or dismantled.

Claim 19 (previously amended): A magnetic filtration system as claimed in claim 2 wherein the housing includes means for attachment to a fluid system.

Claim 20 (currently amended): A magnetic filtration system as claimed in claim 1, further comprising isolation means for isolating fluid flow to and from the filtration system to facilitate removal of fluid flow from and insertion into the ~~fluid~~ filtration system.

Claim 21 (currently amended): A magnetic filtration system as claimed in claim 1, further comprising monitoring means, for monitoring the presence and/or amount of said magnetisable material collected, ~~is disposed~~ in the filtration system.

Claim 22 (currently amended): A magnetic filtration system as claimed in claim 21, further comprising system close down means which is actuated upon detection of a pre-determined level of material collected in the filtration system.

Claim 23 (previously amended): A magnetic filtration system as claimed in claim 1 further comprising a filter medium disposed in the housing to remove non-magnetisable particles input to the system.

Claim 24 (currently amended): A magnetic filtration system as claimed in claim 1, wherein at least one of said collection units includes an electromagnet and switch means for activating the electromagnet to collect ~~particles~~ said magnetisable material and for de-activating the electromagnet to facilitate release of said magnetisable material collected.

Claim 25 (previously amended): A magnetic filtration system as claimed in claim 1, further comprising cellulose fiber, metal or other filter material to remove non-magnetisable material input to said system.

Claim 26 (previously amended): A magnetic filtration system as claimed in claim 25, wherein

Claim 27 (currently amended): A method for removing magnetisable ~~particles~~ material from a fluid in which said magnetisable material is in suspension, comprising:

- providing an apparatus as claimed in Claim 1,
- passing the fluid through said apertures, and
- attracting and retaining said magnetisable ~~particles~~ material in said collection regions.

Claim 28 (previously amended): A method as claimed in claim 27, further comprising detaching the plates from the magnet or magnets and mechanical removal of said magnetisable material from the plates and the magnet or magnets.

Claim 29 (previously amended): A method as claimed in claim 27, further comprising removing said magnetisable material collected, in an undismantled collection unit, with an air line.

Claim 30 (currently amended): A method for removing magnetisable ~~particles~~ material from a fluid in which said magnetisable material is in suspension, comprising:

- providing an apparatus as claimed in Claim 1 wherein at least one of said collection units includes an electromagnet and switch means for activating the electromagnet to collect ~~particles~~ said magnetisable material and for de-activating the electromagnet to facilitate release of said magnetisable material collected,
- passing the fluid, via a fluid system, through said apertures and attracting and retaining said magnetisable ~~particles~~ material in said collection regions,
- activating the electromagnet to retain said magnetisable material in said regions of magnetic attraction,
- de-activating the electromagnet to release said magnetisable material from said regions of magnetic attraction, and
- disposing of said magnetisable material from said fluid system.

Claim 31 (previously amended): A method as claimed in claim 30, wherein the activating and de-activating the electromagnet includes passing current through coils of the electromagnet.

Claim 32 (previously amended): A method for monitoring the quantity and/or type of magnetisable material collected comprising:

- providing an apparatus as claimed in claim 1,
- providing detection means for detecting the presence of magnetisable material collected between facing portions of the plates or plate arrays, part of which detection means extends in the collection region of said one or more collection units,
- monitoring the type or quantity of said magnetisable material present,
- providing alarm means,
- setting off the alarm if the quantity of said magnetisable material rises beyond a pre-determined rate or amount, and
- providing closing down means for a fluid system supplying fluid to said apparatus, and
- closing down the said fluid system if the quantity of said magnetisable material rises beyond a further pre-determined rate or amount.

33. (new) A magnetic filtration system as claimed in claim 1, wherein said facing apertures in said plates define a region of magnetic repulsion.

34. (new) A magnetic filtration system as claimed in claim 33, wherein said facing plates comprise a plurality of said facing apertures defining a plurality of regions of magnetic repulsion.

35. (new) A method as claimed in claim 27, wherein said facing apertures in said plates define a region of magnetic repulsion.


36. (new) A method as claimed in claim 35, wherein said facing plates define a plurality of regions of magnetic repulsion from which magnetisable material is repelled.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A Reifsnyder whose telephone number is (703) 308-0456. The examiner can normally be reached on M-F 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda M Walker can be reached on (703) 308-0457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-3601.


David A Reifsnyder
Primary Examiner
Art Unit 1723

DAR